

## **REMARKS**

With this Amendment, claims 1, 7, 11, and 17-18 have been amended, and claims 5 and 6 have been canceled. New claims 23 and 24 have been added. No new matter has been added by virtue of this Amendment. Support for this Amendment is found throughout the specification. For example, support is found on page 3, line 18 – page 4, line 5; on page 4, lines 11-12; on page 7, lines 5 – 21; and in Fig. 1 of the present application. Claims 3, 9-10, and 12 were previously canceled. Claims 1-2, 4, 7-8, 11, and 13-24 are currently pending in this application.

### **Claim Rejections – 35 USC § 103**

Claims 1-2 and 4-8 were rejected under 35 USC § 103(a) as being unpatentable over Braun et al. (“Confidence Interval of Single Dipole Locations Based on EEG Data”; hereinafter “Braun”) in view of Fuchs et al. (“Functional Imaging of Neuronal Brain Activities: Overlay of Distributed Neuromagnetic Current Density Images and Morphological MR Images”; hereinafter “Fuchs”).

Claims 5 and 6 have been canceled.

The Applicant respectfully asserts that Braun and Fuchs, either alone or in combination, do not disclose, teach, suggest, or render obvious the invention of claim 1. For example, neither Braun nor Fuchs teaches a method comprising “computing a difference between the field distribution and the modified field distribution” and “computing a confidence interval for each dipole based on the difference between the field distribution and the modified field distribution,” as recited in claim 1, as amended. The Examiner states that Braun discloses a method comprising computing a confidence interval. (Office Action, p. 4, para. 2.) However, Braun does not disclose computing a confidence interval based on the difference between a field distribution and a modified field distribution. Fuchs, which does not discuss computing a confidence interval, does not compensate for the deficiencies of Braun.

Moreover, Braun and Fuchs, either alone or in combination, do not disclose, teach, or suggest “displaying the confidence interval in an overlay on a three dimensional image obtained through the use of either magnetic resonance imaging (MRI) or computerized tomography (CT),” as recited in claim 1. The Examiner correctly acknowledges that “Braun does not expressly disclose wherein the confidence interval is overlaid on an image obtained through the use of Magnetic Resonance Imaging.” (Office Action, p. 4, para. 2.) However, the Examiner

goes on to state that Fuchs “discloses a method for functional imaging of neuronal brain activities (see title) wherein the confidence interval is overlaid on an image obtained through the use of Magnetic Resonance Imaging.” (*Id.*) In response, the Applicant respectfully asserts that Fuchs does not teach displaying a confidence interval in an overlay on a three dimensional image obtained through the use of either MRI or CT. At most, Fuchs discloses a display adapted to display an overlay of a 2D neuromagnetic reconstruction on a MR image, with arrows indicating strength and direction of current density. (*See* Fuchs, Fig. 3.) The Applicant notes that, in the Response dated January 19, 2010, on page 5, paragraph 4, the Applicant mistakenly stated that “[a]t most, Braun discloses a display adapted to display an overlay of a 2D neuromagnetic reconstruction on a MR image.” The Applicant meant to state that, at most, Fuchs discloses such a display. The Applicant apologizes for this error.

In order for a claim to be rendered obvious, each of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974). Because Braun and Fuchs, either alone or in combination, do not teach or suggest all of the features of claim 1, as discussed above, claim 1 is not rendered obvious by the cited art.

For the foregoing reasons, claim 1 is not obvious over Braun in view of Fuchs. Claims 2, 4, 7, and 8 are dependent on claim 1, and new claim 23 is dependent on claim 8. Consequently, claims 2, 4, 7-8, and 23 are also not obvious over Braun in view of Fuchs.

Claims 11 and 13-22 were rejected under 35 USC § 103(a) as being unpatentable over Braun in view of Fuchs and further in view of Toshimasa et al. (“The Accuracy of Localizing Equivalent Dipoles and the Spatio-Temporal Correlations of Background EEG”; hereinafter “Toshimasa”).

The Applicant respectfully asserts that Braun, Fuchs, and Toshimasa, either alone or in combination, do not disclose, teach, suggest, or render obvious the invention of claim 11. For example, the cited references, either alone or in combination, do not teach an apparatus comprising a “processor capable of using the data to calculate best fit dipole coordinates, modified dipole coordinates, a field distribution based on the best fit dipole coordinates, a modified field distribution based on the modified dipole coordinates, and a confidence interval based on the difference between the field distribution and the modified field distribution,” as recited in claim 11, as amended. The Examiner states that Braun discloses a method comprising

computing a confidence interval. (Office Action, p. 4, para. 2.) However, as stated above, Braun does not disclose computing a confidence interval based on the difference between a field distribution and a modified field distribution. Therefore, Braun also does not disclose a processor capable of using data to calculate a confidence interval based on the difference between the field distribution and the modified field distribution. Fuchs and Toshimasa do not compensate for the deficiencies of Braun. Fuchs does not discuss computing a confidence interval. Toshimasa teaches the calculation of a confidence region (Toshimasa, p. 1115, col. 2) but does not disclose the calculation of a confidence interval based on the difference between a field distribution and a modified field distribution.

Moreover, Braun, Fuchs, and Toshimasa, either alone or in combination, do not disclose, teach, suggest, or render obvious the invention of claim 17. For example, the cited references, either alone or in combination, do not teach a method comprising “computing a difference between the field distribution and the modified field distribution” and “computing a confidence interval for the best fit dipole coordinates for each signal based on the difference between the field distribution and the modified field distribution,” as recited in claim 17, as amended. As stated above, Braun does not disclose computing a confidence interval based on the difference between a field distribution and a modified field distribution. Fuchs and Toshimasa do not compensate for the deficiencies of Braun. Fuchs does not discuss computing a confidence interval. Toshimasa teaches the calculation of a confidence region (Toshimasa, p. 1115, col. 2), but does not disclose the calculation of a confidence interval based on the difference between a field distribution and a modified field distribution.

Also with regard to claim 17, Braun, Fuchs, and Toshimasa, either alone or in combination, do not disclose, teach, or suggest “displaying the confidence interval on a three-dimensional anatomical map, wherein the confidence interval is displayed in its anatomical position in three dimensions.” The Examiner correctly acknowledges that “[t]he combination of Braun and Fuchs as a whole does not teach wherein the confidence interval is displayed in its anatomical position.” (Office Action, p. 6, para. 4.) However, the Examiner goes on to state that Toshimasa discloses a method “wherein the confidence interval is displayed in its anatomical position.” (*Id.*) In response, the Applicant respectfully asserts that Toshimasa does not teach displaying a confidence interval in its anatomical position. Fig. 1 of Toshimasa shows a plot of the volume of a confidence region as a function of EEG recording time. No anatomical image,

and no depiction of a confidence interval in its anatomical position, is shown. Fig. 2 of Toshimasa shows two dipoles superimposed on an MRI image, but it does not show any confidence intervals. Further, the text of Toshimasa is silent with regard to the display of a confidence interval on a three-dimensional anatomical map, wherein the confidence interval is displayed in its anatomical position in three dimensions.

In order for a claim to be rendered obvious, each of the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974). Because Braun, Fuchs, and Toshimasa, either alone or in combination, do not teach or suggest all of the features of claims 11 and 17, as discussed above, claims 11 and 17 are not rendered obvious by the cited art.

For the foregoing reasons, claims 11 and 17 are not obvious over Braun in view of Fuchs and further in view of Toshimasa. Claims 13 – 16 are dependent on claim 11, claim 21 is dependent on claim 13, and claim 22 is dependent on claim 14. Therefore, claims 13-16 and 21-22 are also not obvious in view of the cited references. Claims 18 – 20 and new claim 24 are dependent on claim 17; consequently, claims 18-20 and 24 are also not obvious over the cited references.

Reconsideration of the rejections of the pending claims, and consideration of new claims 23 and 24, is respectfully requested.

## Conclusion

Applicant respectfully submits that, as amended, the subject application is in condition for allowance, and allowance thereof is kindly requested. Should the Examiner wish to discuss these claims further, or should an Examiner's Amendment be needed in order for the claims to proceed to allowance, the Examiner is invited to contact John Klos at (612) 977-8223 at the Examiner's earliest convenience.

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